L. L. NARAYANA* & M. RADHAKRISHNAIAH**: Floral anatomy of the Pittosporaceae 1

L. L. ナラヤナ*・M. ラダクリシュナイア**: トベラ科の花部解剖学的研究 1

Introduction Except for the work of Saunders (1939) there is no published account of the floral anatomy of the Pittosporaceae. Hence the present study deals with the floral anatomy of *Bursaria spinosa* Cav.

Materials and methods Material for the present study was fixed in formalin-acetic-alcohol. Customary methods of dehydration, infiltration and embedding were followed. Sections cut at a thickness of 8-12 μm were stained in crystal violet using erythrosin as counter stain.

Observations Flower: The flower is pedicellate, actinomorphic, bisexual, dichlamydous, heterochlamydous, hypogynous, pentamerous (except gynoecium) and tetracyclic (Figs. 1, 9, 10, 13-15). The calyx shows basal connation and the free limbs show quincuncial aestivation (Fig. 8). The polypetalous corolla shows imbricate aestivation (Figs. 9, 10, 13-15). The androecium consists of five free stamens (Figs. 13-15). The gynoecium is bicarpellary syncarpous, bilocular below and unilocular towards the top (Figs. 11-13). The style is single and the stigma is bilobed (Figs. 14, 15).

Floral anatomy: The pedicel shows four discrete vascular bundles (Fig. 2). These extend into the thalamus and divide to form a ring of closely placed vascular bundles (Fig. 3). The vascular system is accompanied by a system of resin ducts which run together throughout.

From the ring of closely placed bundles five sepal traces are organized in the thalamus (Figs. 4, 5). They divide radially forming a median and two lateral branches at the level where they enter the bases of the sepals (Fig. 6). In some flowers the calyx shows reduction externally. But the sepal traces are organized as usual and they fade away in the direction of

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the sepals (Fig. 7).

After the demarcation of the sepal traces the main stele organizes into ten prominent bundles (Figs. 5, 6). These bundles give off branches towards inner side (Figs. 5, 6). Some of the branches converge at the centre and organize into two pairs of ventral bundles which are closely placed (Figs. 6, 8). From the remaining branches two arcs of bundles are formed and these constitute the ovary wall supply (Figs. 6, 8-10).

After giving the branches towards the centre the ten bundles supply the petals and the stamens (Fig. 8). Each petal trace branches into three as it enters the base of the petal. The traces supplying the perianth parts divide to form smaller bundles in the respective organs (Figs. 9, 10, 13-15). The anthers are four lobed below and become three lobed above due to the fusion of the inner two sporangia (Fig. 15).

From the arcs of the bundles that supply the ovary wall, those which are close to the ventrals function as median lateral bundles (Figs. 11, 12). These give off branches into the ovary wall (Figs. 11, 12). At about the level where the loculi appear dorsal bundles become distinguishable (Fig. 11). The loculi are lined by a layer of radially elongated cells (Figs. 11-13). Each dorsal bundle divides into two at about the middle of the ovary (Fig. 12). The ovules are borne at the level where the ovary becomes unilocular (Fig. 12). At this level the ventral bundles of the adjacent carpels lie side by side and do not fuse to form common ventral bundles (Fig. 12). The ventral bundles are completely utilized in the ovular supply. The median lateral bundles extend to the top of the style, while the rest of the bundles of the ovary wall terminate towards the top of the ovary. The style is single and the stylar canal is lined by transmitting tissue (Fig. 14). The stigma is commissural.

The gynophore-like disc below the ovary is nonvascularized, and the cells show deep staining vacuolated cytoplasm (Figs. 1, 10).

Summary and conclusions The sepals are three traced and show quincuncial aestivation. The sepal lateral traces arise conjointly with the midribs. The imbricate petals and the stamens are single traced. The gynoecium is bicarpellary syncarpous and the carpels are five traced. Judging from the position of the ventral bundles the placentation can be described as parietal. The ventral bundles are completely used up in the ovular

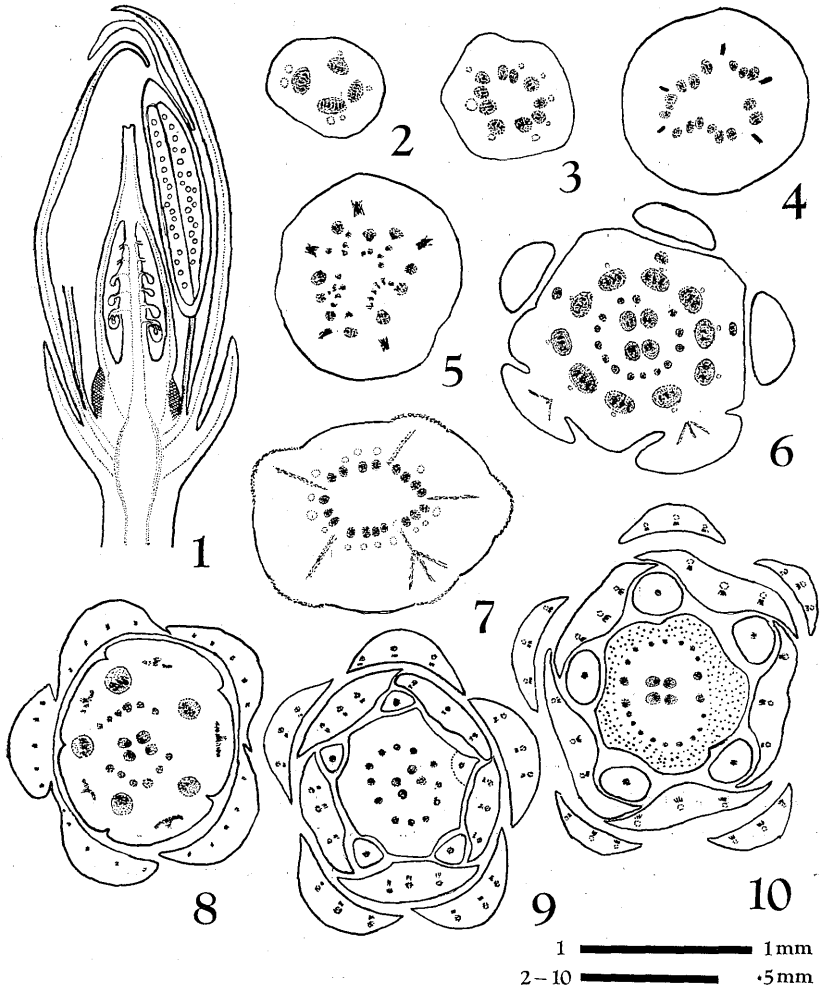
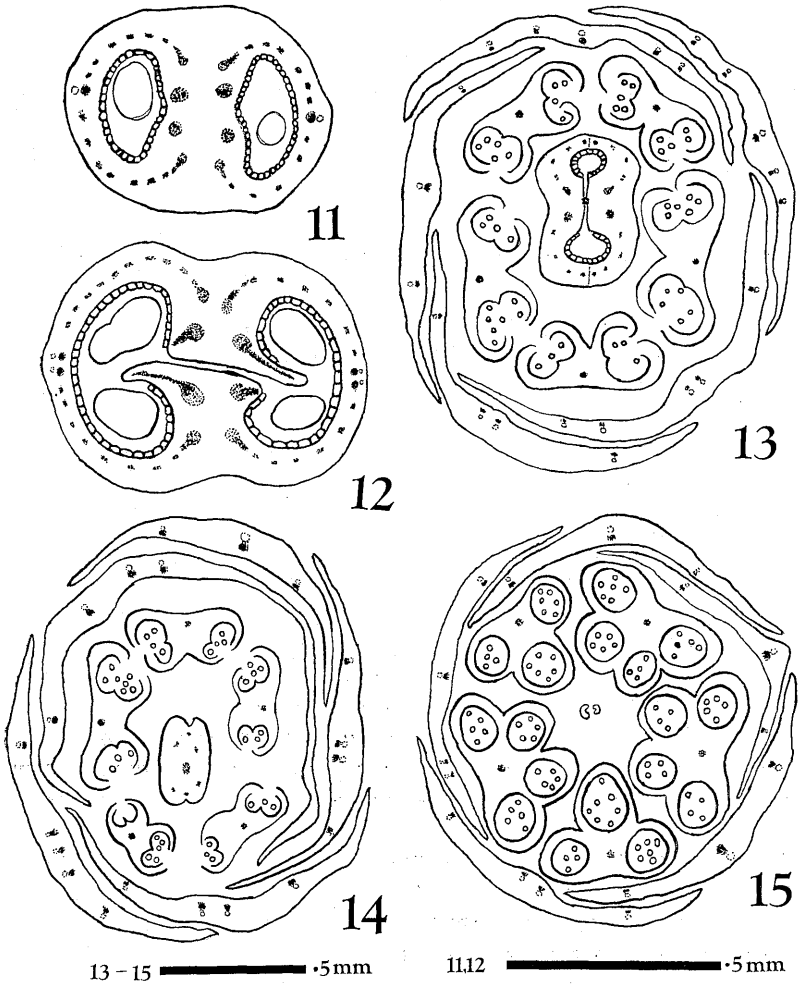


Fig. 1. Longitudinal section of flower showing the course of vascular traces in the different floral parts. Figs. 2-15. Serial transverse sections of flower buds showing the origin and distribution of traces to the different floral parts.

supply. The style is vascularized by median lateral bundles. Gynophore-like disc is devoid of any vascular supply.



Acknowledgements We wish to express our deep sense of gratitude to Dr. Hj. Eichler, Mr. R. H. Kuchel, and the Director, Royal Botanical Gardens, Australia, for sending the fixed material for the present study. Our thanks are due to Prof. U. B. S. Swami, for his interest and encouragement.

Literature cited

Saunders, E.R. 1939. Floral Morphology Vol. II Cambridge.

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トベラ科の *Bursaria spinosa* の花部の解剖学的研究を行ない，花部諸器官への維管束導入の経路を明らかにした。

○Materials for the distribution of lichens in Japan (1) 地衣類分布資料 (1)

○Actinogyra mühlenbergii (Ach.) Schol. This species is one of the commonest lichens in eastern North America and has been reported also from Siberia (Llano, Monogr. of Lich. Fam. Umbilicariaeae in the Western Hemisph., 1950). In Japan, it has been reported only from the Shimokita Peninsula in northern Honshu (Kurokawa, Journ. Jap. Bot. 31 : 351-352, 1956). Among the large collection of lichens of the late Dr. Y. Asahina, I recently found another specimen of this species, though the thallus is rather small (up to 2 cm in diameter) and sterile.

Specimen examined. Hokkaido. Prov. Ishikari: Mt. Ashibetsu, Y. Asahina 21969 (TNS). (Hiroyuki Kashiwadani)

Actinogyra mühlenbergii (オオウラヒダイワタケ) はイワタケ科に属する地衣類で，北米ではごく普通に見られ，シベリアにも産することが知られている。しかし日本では黒川道博士によって，下北半島の縫道岩山からただ一度報告されているだけで，きわめてめずらしく，その群落は 1974 年に国の天然記念物に指定された。最近，筆者は故朝比奈泰彦先生の標本を整理中に，表記の地衣を見い出した。この標本は 20 数個の地衣体からなり，地衣体は小さくすべて無子器である。 (柏谷博之)

□斎木保之： **薬用植物学** pp. 334. 広川書店，東京 (1976, I) ¥4,800。これは新らしい薬用植物学の教科書であるが，二つの大きな背景が働いていると思われる。その一つは近年少くとも数個発表された分類系であって，本書が薬用植物以外に全科を記述し，それにむしろ薬用植物を排列した観があるし，一応エングラーの第 12 版を基準としているが，北村，Hutchinson, Takhtajan, Cronquist の分類を表示しているのはこの事を示すとみてよい。第二は Chemotaxonomy への誘惑である。書中に有効成分以外の成分の化学構造を多くかかげたのはこれを反映しているとみる。じつに多数の成分が載っており，それの有機的関係が系統的にさぐれたら素晴らしい分類の決定版を生むであろう。これらを考えると，この本は単なる教科書ではなく，分類書への資材でもあるといえる。惜しむらくは誤植がかなりある。これはぜひ直してほしい。教科書であるからなおさらである。 (前川文夫)